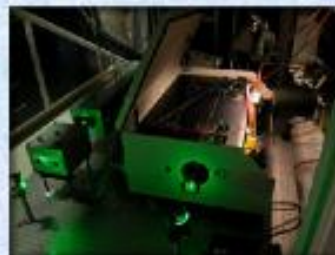
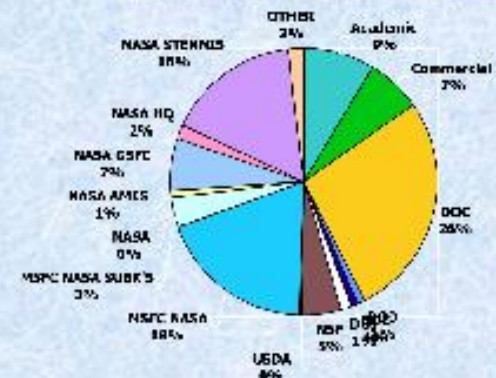
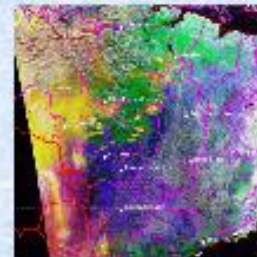


- 40 Graduate students
- 21 P.I. scientists
- 45 Research Staff
- 11 ATS Faculty
- Laboratories and Mobile systems
- State Climatologist
- \$10M FY11 expenditures
- 2 ATS Grads Presidential Scholars



"I'm not looking for what he came back to me, but I want to know what he came back to."

Atmospheric Chemistry



Atmospheric Electricity and Lightning Research at UAH

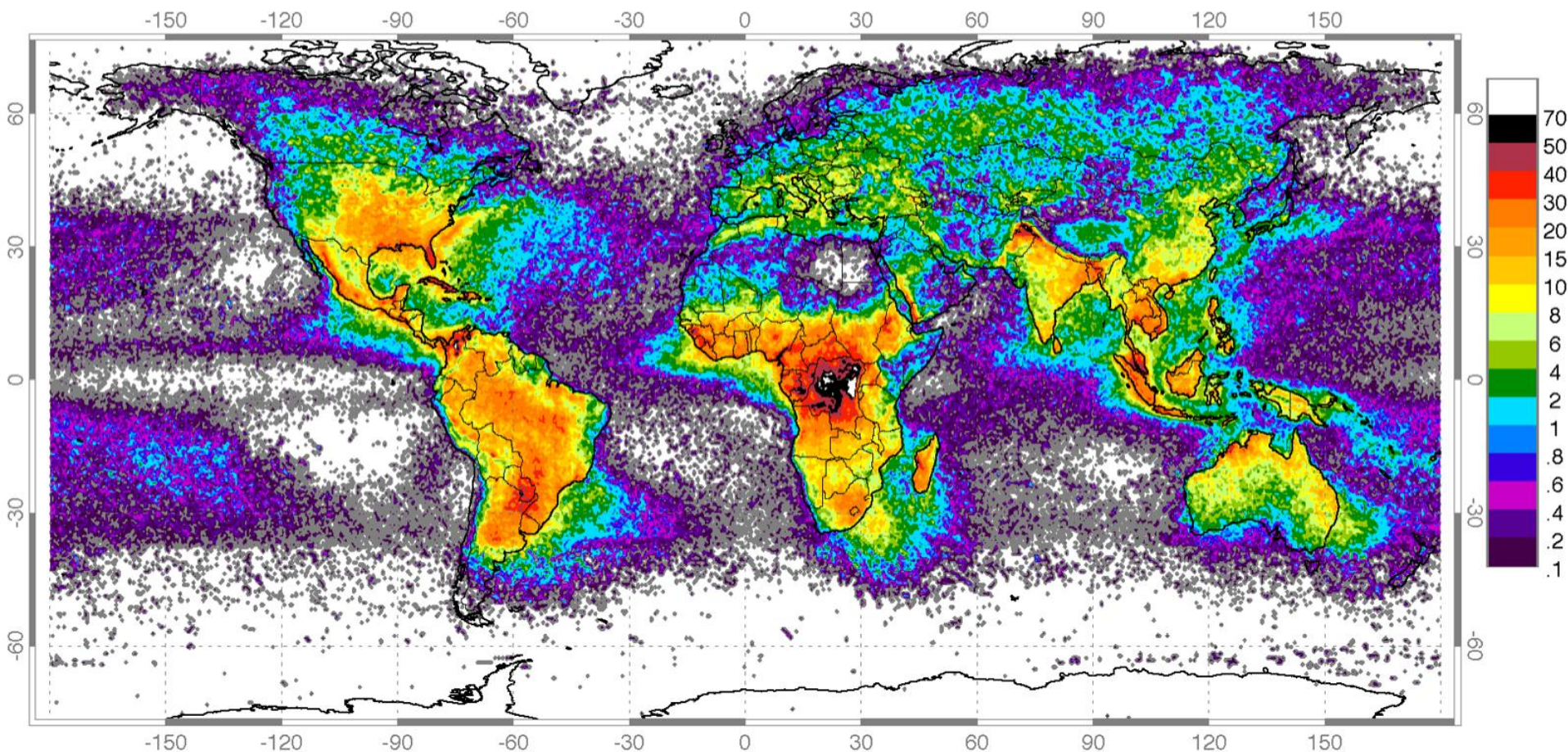
Large Group (>25) includes scientists, engineers and students. Capabilities include:

- Instrument development –
Ground, airborne and space
- Data analysis
- Modeling
- Theory
- The only group with expertise ranging from fundamental lightning physics to space-based monitoring to meteorological applications.
 - a unique combination of physicists, meteorologists and engineers with years of experience is necessary for accomplishing our mission

Key Research Areas and Accomplishments

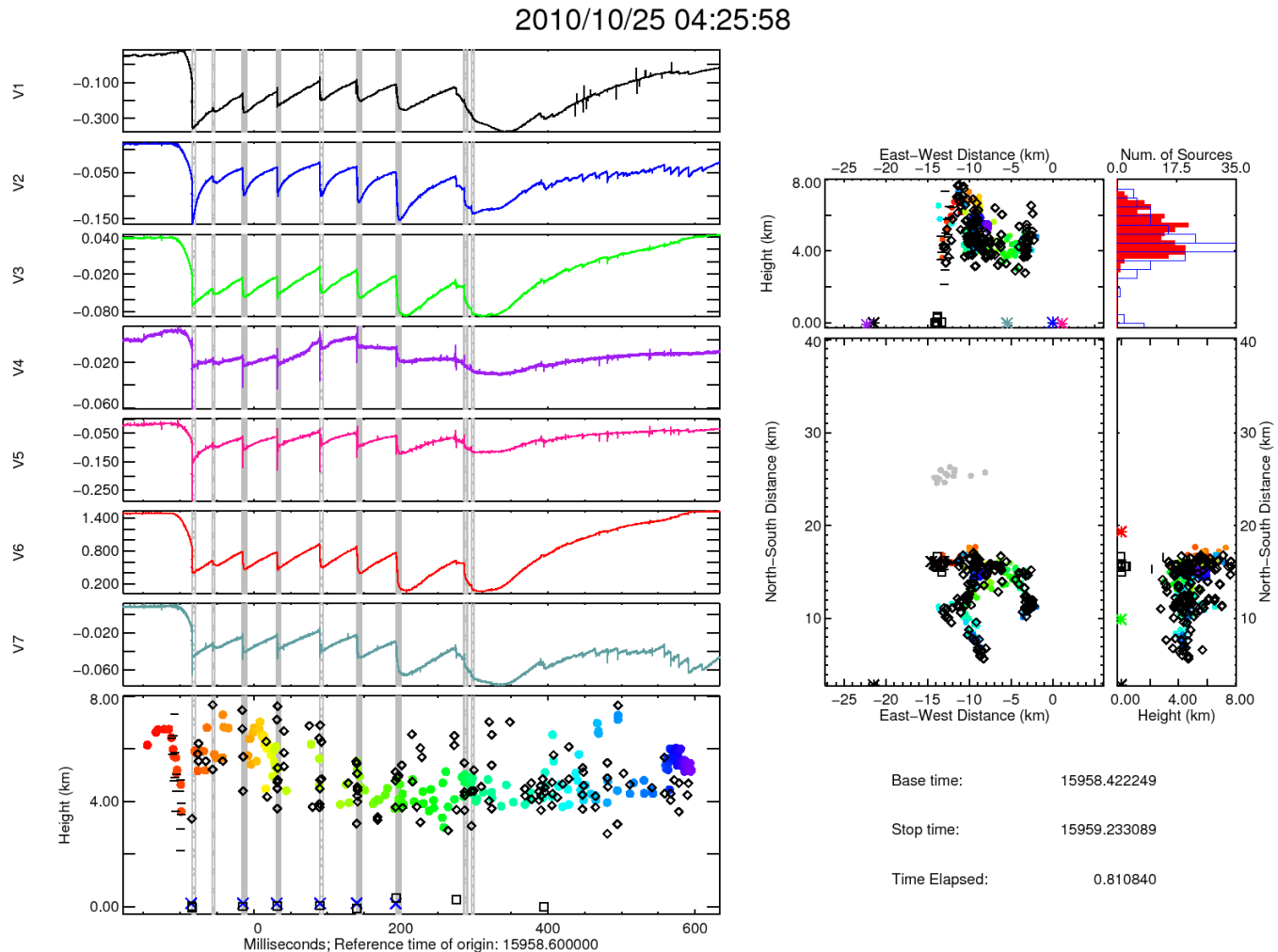
- Space-based lightning observations
 - Developed the OTD/LIS: continuous operations since 1995. Expected to operate through 2014
 - GLM: instrument design and development (with Lockheed Martin); algorithms, risk reduction, verification and training
 - Unique verification capabilities: HAMMA and airborne simulator
- Thunderstorm Electrification
 - Investigate how storms electrify, determine how lightning measurements can be used for monitoring storm development, etc.
 - Extensive use of ground observation capabilities:
 - LMA, multiple parameter, Doppler radars, ground electric field network (new)
- Launch Safety
 - Serve on the NASA/Air Force Lightning Advisory Panel (revise LCC)
 - Developed the ground-based field mill network and conducted two Air-Borne Filled Mill (ABFM) programs
 - Developing an ABFM capability for the Japanese space program

High Resolution Full Climatology Annual Flash Rate



Global distribution of lightning from a combined nine years of observations of the NASA OTD (4/95-3/00) and LIS (1/98-12/04) instruments

HAMMA Detections and Locations vs. LIS



Newer Initiatives

- Lightning Physics
 - Lightning initiation and propagation
 - Remote measurements of thunderstorm electric fields
 - High-speed lightning spectroscopy
 - One microsecond lightning spectroscopy enabling the development of the first ever time resolved gas dynamic model of a lightning channel
 - Ice charging study
- LIS-light as part of a proposed CHASER mission (UAH build)
- Terrestrial Gamma Ray Burst investigation
 - High altitude airplane program to simultaneously measure gamma ray bursts and electric field structure
- Fly's Eye GLM Simulator (FEGS)
 - An optical sensor to be flown on NASA's ER-2 or Global Hawk
 - Designed to simulate GLM observations of lightning from above cloud tops